REMARKS

Claims 1-18 are pending in the present application. Claims 1 and 16 are amended above. No new matter is added by the claim amendments. Entry is respectfully requested.

Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph. Independent claims 1 and 16 are amended above in a manner that is consistent with suggestions made in the Office Action. In particular, claim 1 is amended to recite "forming a second electrode...without curing the second dielectric layer prior to or during the formation of the second electrode". Claim 16 is amended to recite "forming a second electrode...without curing the second Ta_2O_5 layer prior to or during the formation of the second electrode". It is believed that independent claims 1 and 16 are amended in such a manner as to address and overcome the rejection. Reconsideration of the rejection of claims 1 and 16, and dependent claims 2-15 and 17-18, and allowance of the claims are therefore respectfully requested.

Claims 1-12 and 14-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Chung, *et al.* (U.S. Patent Number 6,884,675) in view of Basceri, *et al.* (US Patent Number 6,673,669). Claim 13 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Chung, *et al.* in view of Basceri, *et al.* and further in view of Narwankar, *et al.* (US Patent Number 6,677,254). Reconsideration of the rejection and allowance of the claims are respectfully requested.

In the present invention as claimed in independent claim 1, a method of manufacturing a capacitor of a semiconductor device includes depositing a first dielectric layer on a first electrode, curing the first dielectric layer, depositing a second dielectric layer on the cured first dielectric layer using only a source gas without a reactant gas. Depositing the second dielectric layer includes the steps of introducing the semiconductor substrate into a deposition chamber, supplying only a source gas without a reactant gas to the deposition chamber and heating the semiconductor substrate such that a stable dielectric layer is deposited. After depositing the

second dielectric layer, a second electrode is formed on the second dielectric layer without curing the second dielectric layer prior to or during the formation of the second electrode.

In the present invention as claimed in independent claim 16, a method of manufacturing a capacitor of a semiconductor device includes depositing a first Ta_2O_5 layer on a first electrode, curing the first Ta_2O_5 layer, depositing a second Ta_2O_5 layer on the cured first Ta_2O_5 layer using only $Ta(OC_2H_5)_5$ without a reactant gas. Depositing the second Ta_2O_5 layer includes the steps of introducing the semiconductor substrate into a deposition chamber, supplying only a source gas without a reactant gas to the deposition chamber and heating the semiconductor substrate such that a stable Ta_2O_5 layer is deposited. After depositing the second Ta_2O_5 layer, a second electrode is formed on the second Ta_2O_5 layer without curing the second Ta_2O_5 layer prior to or during the formation of the second electrode.

The Office Action states at page 4, lines 19-21 and at page 7, lines 11-13, that Chung, *et al.* deposits the material by CVD or other methods so, therefore, it is obvious that Chung, *et al.* introduces the substrate into a deposition chamber, supplies a source gas and heats the substrate. In Chung, *et al.*, according to the description of the thermal chemical vapor deposition method, tantalum precursors and ozone gas simultaneously flow into a deposition chamber (see Chung, *et al.*, column 5, lines 6-10). Further, in Chung, *et al.*, according to the description of the atomic layer deposition method, tantalum precursors and ozone gas sequentially flow into a deposition chamber to deposit a tantalum oxide layer (see Chung, *et al.*, column 5, lines 10-13). The stated Chung, *et al.* deposition approaches are similar to the conventional CVD and cyclical deposition procedures discussed in the specification of the present invention at page 7, line 26 through page 8, lines 1-6.

Chung, *et al.* fails to teach or suggest that depositing the second dielectric layer includes "introducing the semiconductor substrate into a deposition chamber, supplying only a source gas without a reactant gas to the deposition chamber and heating the semiconductor substrate such that a stable dielectric layer is deposited", as claimed in claim 1. Instead in Chung, *et al.*,

tantalum precursors, i.e. a "source gas", and ozone gas, i.e. a "reactant gas", are supplied into the deposition chamber in both a CVD method and an ALD method. In the Chung, *et al.* CVD method, the tantalum precursors and the ozone gas are supplied into the deposition chamber "simultaneously" (see Chung, *et al.*, column 5, lines 9-10), while in the Chung, *et al.* ALD method, the tantalum precursors and the ozone gas are supplied into the deposition chamber "sequentially"(see Chung, *et al.*, column 5, lines 10-13). In each case, both the tantulum precursors and the ozone gas are supplied to the deposition chamber. Chung, *et al.* also fails to teach or suggest that depositing the second Ta_2O_5 layer includes the steps of "introducing the semiconductor substrate into a deposition chamber, supplying only a source gas without a reactant gas to the deposition chamber and heating the semiconductor substrate such that a stable Ta_2O_5 layer is deposited", as claimed in claim 16. Instead, in Chung, *et al.*, tantalum precursors, i.e. a "source gas", and ozone gas, i.e. a "reactant gas", are supplied into the deposition chamber.

Basceri, *et al.* is cited in the Office Action as teaching curing a dielectric layer prior to forming a second electrode, or as an alternate embodiment, depositing the second electrode on an uncured dielectric by depositing the electrode with an oxygen atmosphere or diffusing oxygen through the second electrode after deposition. Basceri, *et al.* fails to teach or suggest that depositing the second dielectric layer includes "introducing the semiconductor substrate into a deposition chamber, supplying only a source gas without a reactant gas to the deposition chamber and heating the semiconductor substrate such that a stable dielectric layer is deposited", as claimed in claim 1. Basceri, *et al.* further fails to teach or suggest that depositing the second Ta_2O_5 layer includes the steps of "introducing the semiconductor substrate into a deposition chamber, supplying only a source gas without a reactant gas to the deposition chamber and heating the semiconductor substrate such that a stable Ta_2O_5 layer is deposited", as claimed in claim 16. Basceri, *et al.*, does not explain in detail how the capacitor dielectric layer 32 is deposited, and therefore, it cannot be inferred that Basceri, *et al.* teaches that the capacitor dielectric layer 32 is deposited using only a source gas without a reactant gas.

Neither Chung, *et al.* nor Basceri, *et al.* teaches or suggests that depositing the second dielectric layer includes "introducing the semiconductor substrate into a deposition chamber, supplying only a source gas without a reactant gas to the deposition chamber and heating the semiconductor substrate such that a stable dielectric layer is deposited", as claimed in claim 1. Further, neither Chung, *et al.* nor Basceri, *et al.* teaches or suggests that depositing the second Ta_2O_5 layer includes the steps of "introducing the semiconductor substrate into a deposition chamber, supplying only a source gas without a reactant gas to the deposition chamber and heating the semiconductor substrate such that a stable Ta_2O_5 layer is deposited", as claimed in claim 16. Accordingly, it is submitted that the combination of Chung, *et al.* and Basceri, *et al.* fails to teach or suggest the invention as claimed in claims 1 and 16. Reconsideration of the rejection of, and allowance of, claims 1 and 16 are respectfully requested. With regard to the dependent claims 2-15, 17 and 18, it follows that these claims should inherit the allowability of the independent claims from which they depend.

With regard to the rejection of claim 13, Narwankar, *et al.* is cited in the Office Action as disclosing forming an oxygen atmosphere by supplying gas in a thermal heated operation or in an RF plasma. Like Chung, *et al.* and Basceri, *et al.*, Narwankar, *et al.* fails to teach or suggest that depositing the second dielectric layer includes "introducing the semiconductor substrate into a deposition chamber, supplying only a source gas without a reactant gas to the deposition chamber and heating the semiconductor substrate such that a stable dielectric layer is deposited", as claimed in claim 1. Accordingly, it is submitted that the combination of Chung, *et al.*, Basceri, *et al.* and Narwankar, *et al.* fails to teach or suggest the invention as claimed in claim 1. Reconsideration of the rejection of, and allowance of, claim 13 which is dependent from claim 1 are respectfully requested.

Closing Remarks

It is submitted that all claims are in condition for allowance, and such allowance is respectfully requested. If prosecution of the application can be expedited by a telephone conference, the Examiner is invited to call the undersigned at the number given below.

Respectfully submitted,

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